

PATENT ABSTRACTS OF JAPAN

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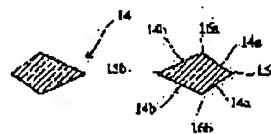
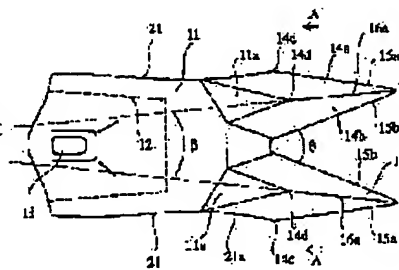
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(22)Date of filing : 13.02.1995 (72)Inventor : SEKI AKIO

(54) BUCKET PAWL FOR EXCAVATOR

(57)Abstract:

PURPOSE: To provide a bucket pawl capable of being used against the soil having a high abrasion property at a high excavating speed with a long life by providing multi-pyramidal projections having sharp cutting edges on the side faces in the forked state at the tip of a bucket pawl.

CONSTITUTION: Multi-pyramidal projections (edge tip sections) 14 having sharp cutting edges on the side faces are provided in the forked state at the tip of a bucket pawl 1 for an excavator. The inside cutting edges of the projections are set to a more acute angle than the outside cutting edges, and the rear ends 14c, 14c, 14d, 14d of the outside cutting edges are most protruded to the outside. The angle between the outside faces 14a, 14a of the projections 14 is set to 45°-90°, and the angle between the inside faces 14b, 14b is preferably set to about 20°-60°. The angle θ between the inside ridge lines 15b, 15b of the projections 14 is preferably set to about 20°-60°, and the angle β between the ridge lines 16a, 16b of the outside faces 14a and the inside faces 14b of the projections is preferably set to about 5°-15°.



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* NOTICES *

CLAIMS

[Claim(s)]

[Claim 1] the multiple drill-like lobe which has a sharp cutting edge on the side face -- a nose of cam -- two forks -- the bucket presser foot stitch tongue for excavators characterized by being prepared in the **

[Claim 2] It is the bucket presser foot stitch tongue for excavators which the cutting edge inside the cutting edge of the outside of each lobe is an acute angle, and is characterized by having juttred out the back end of an outside cutting edge outside most in the bucket presser foot stitch tongue for excavators according to claim 1.

[Claim 3] The angle which the angle which two lateral surface of each lobe makes is about 45 degrees - 90 degrees in the bucket presser foot stitch tongue for excavators according to claim 1 or 2, and two medial surfaces make is a bucket presser foot stitch tongue for excavators characterized by being about 20 degrees - 60 degrees.

[Claim 4] The angle which the ridgeline inside two heights makes in the bucket presser foot stitch tongue for excavators according to claim 1 to 3 is a bucket presser foot stitch tongue for excavators characterized by being about 20 degrees - 60 degrees.

[Claim 5] The angle which the ridgeline which was able to cross and do the ridgeline which was able to cross and do one lateral surface and medial surface of a height in the bucket presser foot stitch tongue for excavators according to claim 1 to 4, and the lateral surface and medial surface of a height of another side makes is a bucket presser foot stitch tongue for excavators characterized by being about 5 degrees - 15 degrees.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention relates to the bucket presser foot stitch tongue which can also use the high soil of wear nature, such as a sandstone, for excavators, such as a power shovel, especially for a long period of time about the bucket presser foot stitch tongue with which it equips free [attachment and detachment].

[0002]

[Description of the Prior Art] Many presser foot stitch tongues for excavating in the bucket of excavators, such as a power shovel, are formed at the nose of cam. The standard bucket presser foot stitch tongue used now is shown in drawing 5 . The bucket presser foot stitch tongue 1 consists of the hole 13 and the edge-of-a-blade section 14 for fixing among the bucket engagement section by the centrum 12 and pin which this wedge-like soma 11 and the presser-foot-stitch-tongue engagement section insert. Various kinds of presser foot stitch tongues into which the edge-of-a-blade section was made to transform according to intended use are prepared. For example, when excavating the soil of the quality of rock, the presser foot stitch tongue of the rock bucket which the edge-of-a-blade section projected in the shape of a spear is used.

[0003] However, when the wear nature to an iron bucket presser foot stitch tongue excavates remarkable soil like a sandstone or a conglomerate, by the bucket presser foot stitch tongue with the flat nose of cam edge-of-a-blade section, there is a problem that interlocking to soil is shallow, wear of there being not only few amounts of digging but the edge of a blade is remarkable, and a life is short. Although interlocking is deep when a spear-like rock bucket is used as a bucket presser foot stitch tongue, a limitation is in the enhancement in an efficiency too. Moreover, since it is necessary to accustom a ground level after digging by the case in order for the excoriation to serve as a slot and to remain in the ground, when it excavates with a rock bucket, and an excessive rating increases, it is not desirable.

[0004] Therefore, the purpose of this invention is offering the bucket presser foot stitch tongue which can also use the high soil of wear nature, such as a sandstone, from a long life.

[0005]

[Means for Solving the Problem] When this invention person prepared two excrescence of the shape of a sharp multiple drill at the nose of cam of a presser foot stitch tongue zealously in view of the above-mentioned purpose as a result of the research, it discovered that a digging speed could be raised, suppressing wear, and hit on an idea to this invention.

[0006] namely, the multiple drill-like lobe which has a cutting edge with the bucket presser foot stitch tongue for excavators of this invention sharp on the side face -- a nose of cam -- two forks -- it is characterized by being prepared in the **

[0007]

[Function and Example(s)] Drawing 1 shows an example of the bucket presser foot stitch tongue of this invention, and the drawing 2 or the drawing 4 shows the side face, a flat surface, and a cross section, respectively. the hole 13 for the bucket presser foot stitch tongue 1 of this invention fixing by the pin among this soma 11 which has a wedge-shaped configuration, the centrum 12 which the presser-foot-stitch-tongue engagement section of a bucket inserts, and the bucket engagement section, and the nose of cam of this soma 11 -- two forks -- it consists of the two edge-of-a-blade sections 14 prepared in the **

[0008] In this example, each edge-of-a-blade section 14 has the shape of a square drill which has the cross section of a rhombus mostly as shown in drawing 4. Each edge-of-a-blade section 14 has the lateral surface 14a and 14a which crosses at a big angle, and the medial surfaces 14b and 14b which cross at a small angle. Ridgeline 15a which was able to cross and do lateral surface 14a and 14a is jutted out outside as it goes to the back end from a nose of cam, it is most located outside by point 14c, and is connected to inclined-plane 21a which follows the side face 21. On the other hand, ridgeline 15b which was able to cross and do medial surfaces 14b and 14b inclines inside at the angle a little bigger than outside ridgeline 15a. Angle theta which the ridgelines 15b and 15b inside the double-edged sword point sections 14 and 14 make is within the limits of about 20 degrees - 60 degrees. Moreover, in drawing 4, the up-and-down ridgelines 16a and 16b are jutted out up and down, respectively, and touch the inclined planes 11a and 11a which continued from this soma 11 at points 14d and 14d. Thus, each edge-of-a-blade section 14 has the configuration of the four[about]-sided pyramids which use points 14c and 14d as the outermost edge.

[0009] The direction of the angle which two medial surfaces 14b and 14b make from the angle which two lateral surface 14a and 14a makes as shown in drawing 4 is the parvus. As for the angle which two lateral surface 14a and 14a makes, it is desirable that it is about 45 degrees - 90 degrees, and, as for the angle which two medial surfaces 14b and 14b make, it is desirable that it is about 20 degrees - 60 degrees. Thus, the direction of the cutting edge inside the cutting edge of the outside of each lobe 14 has the acute angle. Moreover, angle alpha which the up-and-down ridgelines 16a and 16b make in drawing 2 has about 20 degrees - desirable 40 degrees. Furthermore, angle beta which the ridgelines 16a and 16a of the double-edged sword point sections 14 and 14 make in drawing 3 has about 5 degrees - desirable 15 degrees.

[0010] If the edge-of-a-blade section 14 of such a configuration is used, the soil of the quality of rock can also be excavated easily and the advantage that there is little wear at the time of digging will be acquired. It is thought that this is because the rock at the nose of cam of the edge of a blade is pushed into the double-edged sword point section 14 and 14 and is cut by the inside ridgelines 15b and 15b. Moreover, since the ridgelines 15a and 15a of two outsides incline inside slightly towards a nose of cam, the advantage that it becomes easy for the edge-of-a-blade sections 14 and 14 to advance into soil is also acquired.

[0011] Since the bucket presser foot stitch tongue 1 of this invention is as above-mentioned a square drill-like, each fields 14a, 14a, 14b, and 14b average by digging, and it is worn out, and hardly changes the configuration of a square drill. Therefore, while using it, the problem which suited the conventional bucket presser foot stitch tongue that digging capacity declined is solved.

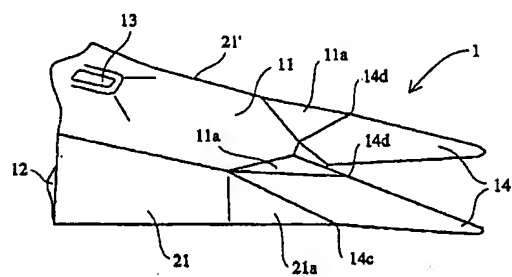
[0012] Especially the quality of the material of the bucket presser foot stitch tongue 1 is not limited, but can be manufactured in one with cast iron or steel casting. moreover, this soma 11, the centrum 12, and the object for bucket engagement -- suppose that it is the same as that of the former about a hole 13

[0013] As mentioned above, although this invention was explained with reference to the accompanying drawing, this invention is not limited to this, but unless it deviates from the thought of this invention, it can perform various change. For example, the configuration of this soma can be changed into excavators, such as various kinds of power shovels, or, naturally a size can be changed into the buckets of various sizes. Moreover, change of a configuration which does not have a new effect can also be performed easily for this contractor.

[0014]

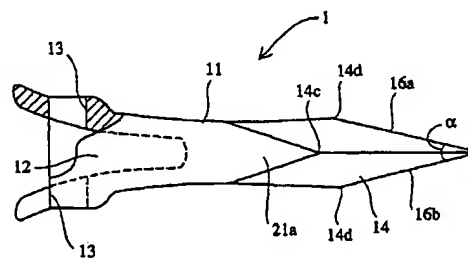
[Effect of the Invention] since it has multiple drill [which was described above / which has the ridgeline where the bucket presser foot stitch tongue of this invention is sharp like]-like two lobes -- the high soil of wear nature, such as a sandstone, -- a life -- while it can be used for a long time, the advantage that a digging speed is early is also acquired The bucket presser foot stitch tongue of this invention can be widely used for excavators, such as a power shovel and a bulldozer, and other engineering-works machine instruments.

Drawing selection



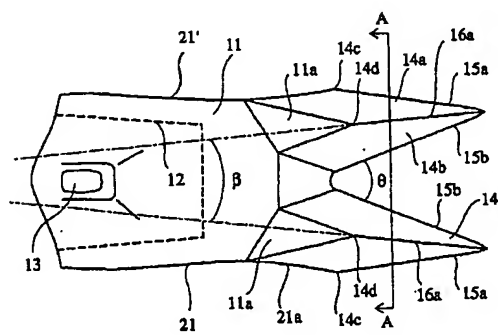
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Drawing selection Drawing 2



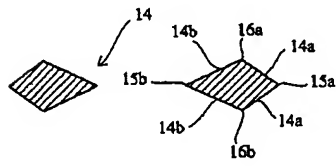
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Drawing selection Drawing 3



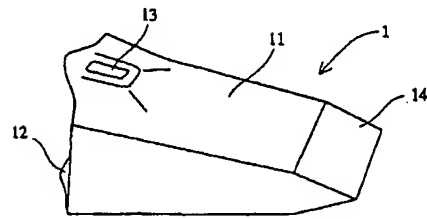
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Drawing selection Drawing 4



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Drawing selection Drawing 5



[Translation done.]

(11)特許出願公開番号

(43)公開日 平成8年(1996)8月27日

A

(74)代理人 弁理士 高石 橘馬

【特許請求の範囲】

【請求項1】 側面に鋭利な切刃を有する多角錐状の突出部が先端に二股状に設けられていることを特徴とする掘削機用バケット爪。

【請求項2】 請求項1に記載の掘削機用バケット爪において、各突出部の外側の切刃より内側の切刃が鋭角であり、かつ外側の切刃の後端は最も外側に張り出していることを特徴とする掘削機用バケット爪。

【請求項3】 請求項1又は2に記載の掘削機用バケット爪において、各突出部の2つの外側面がなす角度は約45°～90°であり、2つの内側面がなす角度は約20°～60°であることを特徴とする掘削機用バケット爪。

【請求項4】 請求項1～3のいずれかに記載の掘削機用バケット爪において、2つの突起部の内側の稜線がなす角度は約20°～60°であることを特徴とする掘削機用バケット爪。

【請求項5】 請求項1～4のいずれかに記載の掘削機用バケット爪において、一方の突起部の外側面と内側面とが交差してできた稜線と、他方の突起部の外側面と内側面とが交差してできた稜線とがなす角度は約5°～15°であることを特徴とする掘削機用バケット爪。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明はパワーショベル等の掘削機に着脱自在に装着するバケット爪に関し、特に砂岩等の摩耗性の高い土壌でも長期間使用できるバケット爪に関する。

【0002】

【従来の技術及び発明が解決しようとする課題】 パワーショベル等の掘削機のバケットには、掘削するための多数の爪が先端に設けられている。図5には現在用いられている標準的なバケット爪を示す。バケット爪1はくさび状の本体部11、爪係合部が嵌入する中空部12、ピンでバケット係合部に固着するための孔13及び刃先部14からなる。用途に応じて刃先部を変形させた各種の爪が用意されている。例えば、岩石質の土壌を掘削する場合、刃先部が槍状に突出した岩バケットの爪が用いられる。

【0003】 しかし、砂岩や礫岩等のように鉄製のバケット爪に対する摩耗性が著しい土壌を掘削する場合、先端刃先部が平坦なバケット爪では土への食い込みが浅くて掘削量が少ないのみならず、刃先の摩耗が著しくて寿命が短いという問題がある。バケット爪として槍状の岩バケットを使用すると食い込みは深い、やはり能率の向上に限界がある。また岩バケットで掘削した場合、爪痕が溝となって地面に残るため、場合によっては掘削後地表面をならす必要があり、余計な作業量が増えるため好ましくない。

【0004】 したがって本発明の目的は、砂岩等の摩耗性の高い土壌でも長い寿命で使用できるバケット爪を提供することである。

【0005】

【課題を解決するための手段】 上記目的に鑑み鋭意研究の結果、本発明者は、爪の先端に鋭利な多角錐状の2本の突出物を設ければ、摩耗を抑制しながら掘削速度を向上させることができることを発見し、本発明に想到した。

【0006】 すなわち、本発明の掘削機用バケット爪は、側面に鋭利な切刃を有する多角錐状の突出部が先端に二股状に設けられていることを特徴とする。

【0007】

【作用及び実施例】 図1は本発明のバケット爪の一例を示し、図2乃至図4はそれぞれ側面及び平面及び断面を示す。本発明のバケット爪1は、くさび形の形状を有する本体部11と、バケットの爪係合部が嵌入する中空部12と、バケット係合部にピンで固着するための孔13と、本体部11の先端に二股状に設けられている二本の刃先部14とからなる。

【0008】 本実施例では各刃先部14は、図4に示すようにほぼ菱形の断面を有する四角錐状である。各刃先部14は大きな角度で交差する外側面14a、14aと、小さな角度で交差する内側面14b、14bとを有する。外側面14a、14aが交差してできた稜線15aは先端から後端に行くに従って外側に張り出し、点14cで最も外側に位置して、側面21と連続する傾斜面21aに接続している。一方、内側面14b、14bが交差してできた稜線15bは外側の稜線15aよりやや大きな角度で内側に傾斜している。両刃先部14、14の内側の稜線15b、15bがなす角度θは約20°～60°の範囲内にある。また、図4において上下の稜線16a、16bはそれぞれ上下に張り出し、点14d、14dで本体部11から連続した傾斜面11a、11aと接する。このように、各刃先部14は点14c、14dを最外端とするほぼ四角錐の形状を有する。

【0009】 図4に示すように、2つの外側面14a、14aがなす角度より2つの内側面14b、14bがなす角度の方が小さい。2つの外側面14a、14aがなす角度は約45°～90°であるのが好ましく、また2つの内側面14b、14bがなす角度は約20°～60°であるのが好ましい。このように各突出部14の外側の切刃より内側の切刃の方が鋭角になっている。また、図2において上下の稜線16a、16bがなす角度αは約20°～40°が好ましい。さらに、図3において両刃先部14、14の稜線16a、16aがなす角度βは約5°～15°が好ましい。

【0010】 このような形状の刃先部14を使用すると、岩石質の土壌でも簡単に掘削することができ、掘削時の磨耗が少ないという利点が得られる。これは、刃先先端の岩石が両刃先部14、14内に押し入れられ、内側の稜線15b、15bにより切断されるためであると考えられる。また、2つの外側の稜線15a、15aが先端に向けて僅かに内側に傾斜しているため、刃先部14、14が土壌内に進入するのが容易となるという利点も得られる。

【0011】本発明のバケット爪1は、上記の通り四角錐状であるので、掘削により各面14a、14a、14b、14bが平均して磨耗し、四角錐の形状がほとんど変わらない。従って、使用しているうちに掘削能力が低下するという従来のバケット爪にあった問題が解消している。

【0012】バケット爪1の材質は特に限定されず、鋳鉄又は鋳鋼等により一体的に製造することができる。また、本体部11、中空部12及びバケット係合用孔13については、従来と同一とすることができる。

【0013】以上、本発明を添付図面を参照して説明したが、本発明はこれに限定されず、本発明の思想を逸脱しない限り種々の変更を行うことができる。例えば、各種のパワーショベル等の掘削機用に本体部の形状を変更したり、各種サイズのバケット用にサイズを変更することができるのは当然である。また、新たな効果を有しない形状の変更も当業者にとって容易に行うことができる。

【0014】

【発明の効果】以上述べたように、本発明のバケット爪は、鋭利な稜線を有する多角錐状の二本の突出部を有するので、砂岩等の摩耗性の高い土壌でも寿命長く使用できるとともに、掘削速度が早いという利点も得られる。本発明のバケット爪は、パワーショベル、ブルドーザ等の掘削機、その他の土木機械器具に広く使用することが

できる。

【図面の簡単な説明】

【図1】本発明の掘削機用バケット爪の一例を示す斜視図である。

【図2】本発明の掘削機用バケット爪の一例を示す部分断面側面図である。

【図3】本発明の掘削機用バケット爪の一例を示す平面図である。

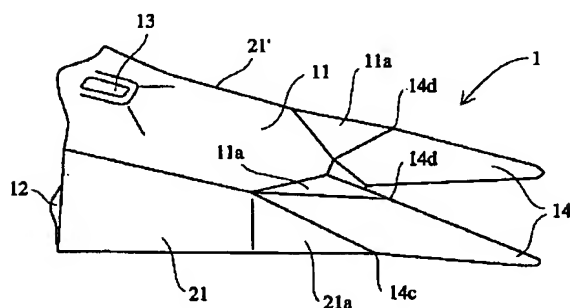
【図4】図3のA-A断面図である。

【図5】従来の掘削機用バケット爪の一例を示す斜視図である。

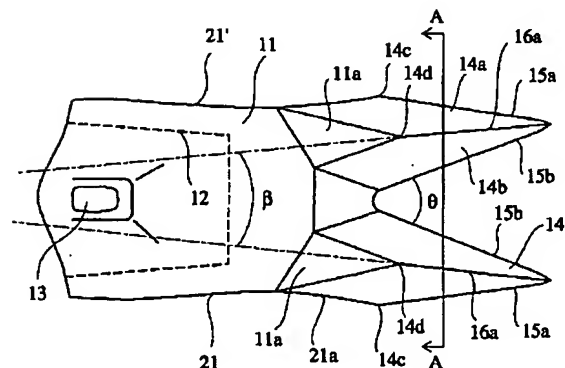
【符号の説明】

- 1・・・バケット爪
- 11・・・本体部
- 11a、21a・・・傾斜面
- 12・・・中空部
- 13・・・孔
- 14・・・刃先部（突出部）
- 14a・・・外側面
- 14b・・・内側面
- 15a・・・外側稜線
- 15b・・・内側稜線
- 16a、16b・・・稜線
- 21、21'・・・本体部の側面

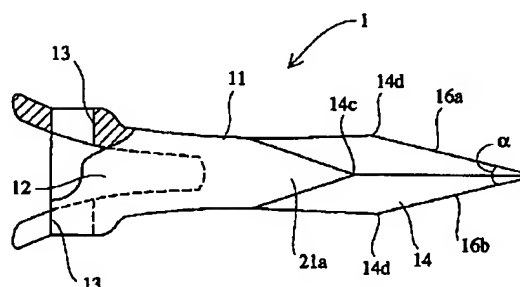
【図1】



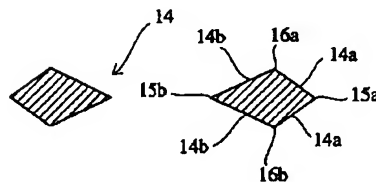
【図3】



【図2】



【図4】



(4)

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【図5】

